

Tennessee Pollution Prevention Partnership Success Story



DENSO Manufacturing Tennessee, Inc.
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Pledge Prevents Slugs at On-Site Wastewater Plant

The Member

DENSO Manufacturing Tennessee, Inc., is part of DENSO Corporation's global network of 74 subsidiaries in 29 nations and the fourth largest producer of advanced technology, components and systems for all major automakers. The Tennessee facilities employ more than 2,800 associates at two locations, Maryville and Athens. Automotive components and systems produced at the Tennessee operations include the following:

Maryville: Alternators, starters, instrument clusters, and electronic components

Athens: Oxygen sensors, fuel injectors, air-flow meters, ignition coils, and spark plugs

The Story - Converting Hazardous Waste to a Treatment Chemical

DENSO's Starter/Alternator phosphate coating line discharged acid waste to the wastewater pretreatment facility due to high iron concentrations or equipment malfunctions. This waste consisted of 400 L 70% sulfuric acid and 2,030 liters of water and was emptied into a sump located at the process line, from which it was pumped to the wastewater pretreatment plant. The waste was then treated before being released to the City of Maryville Wastewater Plant. The waste was very corrosive and damaged the lining of the sump and associated pumps. The low pH of the waste and the high concentration of dissolved iron equated to slug loading of the wastewater pretreatment plant. This caused the solid concentrations in the neutralized waste to exceed the removal capacity of the system clarifier.

The amount of caustic soda needed for neutralization of this waste was very high.

New Idea - Change System to Use Acid in New Manner

The solution was to pump the used waste directly from the process line to a holding tank located in the wastewater pretreatment plant, thus preventing damage to the sump and associated pumps. A feed system with the holding tank allows treatment operators to feed small amounts of the acid into each "batch" or use it to adjust pH in the chromium waste treatment process. The iron concentration in acid makes it useful as a coagulant. The coagulant attaches to contaminants such as oil, grease & metals in wastewater. This causes the materials to separate from the water for easy removal.

The Success

The formerly classified hazardous waste acid is now used to treat our raw wastewater. Our treatment chemical usage was reduced by 37% resulting in an estimated \$6,000 cost savings per year. Additional benefits include reduced amount of slug loading for increased operational efficiency of treatment system, extended equipment life of sump linings and pumps, and a safety improvement since treatment operators no longer manually transfer acid.

Future Activities

Through "kaizen" or continuous improvement activities, we are able to execute our slogan, "Prevent Pollution: Reduce, Recycle, and Reuse". DENSO always looks for opportunities to prevent pollution and be a responsible corporate citizen.

TENNESSEE POLLUTION PREVENTION PARTNERSHIP

1-800-734-3619

<http://www.state.tn.us/environment/dca/to3.htm>